CHAPTER 10
HEALTH PROMOTION

Medical care begins with the sick and seeks to keep them alive, make them well, or minimize their disability.

Disease prevention begins with a threat to health--a disease or environmental hazard--and seeks to protect as many people as possible from the harmful consequences of that threat.

Health promotion begins with people who are basically healthy and seeks the development of community and individual measures which can help them to develop lifestyles that can maintain and enhance the state of well-being.

Clearly, the three are complementary, and any effective national health strategy must encompass and give due emphasis to all of them.

Beginning in early childhood and throughout life, each of us makes decisions affecting our health. They are made, for the most part, without regard to, or contact with, the health care system. Yet their cumulative impact has a greater effect on the length and quality of life than all the efforts of medical care combined.

Many factors increasing the risk of premature death can be reduced without medication. In fact, as we have noted, the striking decline in heart disease death rates in this country since the mid-1960s has coincided with reductions in several risk factors: cigarette smoking by men, consumption of high fat products, average serum cholesterol levels, and the number of people with untreated high blood pressure (Figure 10-A). During the same period in Europe, neither personal risk factors nor heart disease death rates declined.

FIGURE 10-A

PERCENT DECREASES IN RISK FACTORS
FOR CORONARY HEART DISEASE*

Risk Factor	Approximate Percent Decrease	Time Period
Cigarette smoking (% who smoke)		
Men	26	1964-1975
Women	8	
Per capita consumption of:		
Tobacco	22	1963-1975
Fluid milk and cream	20	
Butter	32	
Eggs	13	
Percent with high cholesterol (260 mg/100 ml plus):		
Men age 45-54	6	c1962-c1975
Men age 55-64	14	
Women age 45-54	13	
Women 55-64	29	
Percent hypertensives untreated:		
In U.S.	10	c1962-c1974
In 14 U.S. cities**	25	

*NOTE: Coronary heart disease deaths (to which these risk factors are related) declined by 20 percent in the period 1968-1976.

**Part of a special National Heart, Lung, and Blood Institute study program.

Consider, too, the strikingly lower cancer rates among certain groups of Americans compared to those for the general population.

Seventh Day Adventists neither smoke nor drink, and about half follow a milk, egg and vegetable diet. For this group, not only is their cancer incidence, for those cancers strongly related to smoking and drinking, less than one seventh that of the general population; even their cancer incidence at other sites is only half to three-fourths as high. Similarly, Mormons, who also abstain from smoking and alcohol, have lower cancer rates.

And there are the promising results coming from recent efforts to organize community resources for health promotion.

Notable examples include the Stanford Heart Disease Prevention Program and the Multiple Risk Factor Intervention Trial (MRFIT), both funded by the National Heart, Lung, and Blood Institute.

The Stanford program, begun in 1972, has been monitoring the rates of cigarette smoking, serum cholesterol levels, and uncontrolled hypertension in three Northern California communities. Two of the three employed active risk reduction activities, including messages designed for television, radio, newspapers and other media. In one of these two communities, face-to-face counseling also was provided for a sample of high risk individuals.

Within a two-year period in the two experimental communities, overall heart disease risk fell by about 25 percent. In both, there were reductions in average serum cholesterol and a six percent lowering of systolic blood pressures. A substantial reduction (net decrease of 35 percent) in smoking was achieved only among the high-risk individuals receiving counseling. In the community without an active information program, overall risk for heart disease actually increased during the first two years of the study.

The Multiple Risk Factor Intervention Trial program also seeks to change behaviors with respect to smoking, serum cholesterol, and high blood pressure. It is a multicenter clinical trial in 22 communities to determine whether, for men at high risk, a concentrated program based on counseling and directed simultaneously toward the three risks will result in a significant reduction in heart disease deaths.

Although final study results will not be available until 1983, preliminary data are especially encouraging with respect to the numbers of participants who have stopped smoking and those whose high blood pressure is under control. Moderate cholesterol reduction also has been achieved.

Abroad, promising results have come from a program in the province of North Karelia, Finland, which has the highest documented heart disease rate in the world.

In the early 70s, more than half of the men in North Karelia smoked; they also had extremely elevated cholesterol levels and high consumption of animal fats and dairy products; untreated hypertension was common.

Concerned about their high heart disease rate, North Karelians developed a massive health promotion campaign designed to help the 250,000 province residents control their blood pressure, reduce cholesterol intake, and stop smoking. Efforts included promotion of low-fat dairy products and low-fat sausages by local industries, training of local residents as health personnel, and extensive media coverage.

After five years, there was a 21 percent drop in cigarette smoking among middle-aged people and a 35 percent decline among young women. Butter consumption dropped dramatically and 29 percent of the population was using low-fat milk. The number of men with high blood pressure declined by 25 percent. Among women, the decline was 50 percent.

And, significantly, preliminary results yet to be confirmed show a drop of 14 percent in heart attack incidence and a 40 percent drop in the incidence of stroke among North Karelians aged 30 to 64.

Here at home too, after the University of Southern California Medical Center ravamped its diabetic care system--by installing a telephone hotline for information and advice, making available counseling by physicians and nurses, and issuing pamphlets and posters to promote the service--emergency room visits per patient were halved and the incidence of diabetic coma decreased by two-thirds.

Relatively simple community health education programs, now increasing in number, can indeed make contributions.

This chapter deals with five types of behaviors which affect health and are targets for health promotion programs: smoking, alcohol and drug use, nutrition, exercise and fitness, and management of stress.

Smoking Cessation

Cigarette smoking is clearly the largest single preventable cause of illness and premature death in the United States.

It is associated, as Section II noted, with heart and blood vessel diseases; chronic bronchitis and emphysema; cancers of lung, larynx, pharynx, oral cavity, esophagus, pancreas, and urinary bladder; and with other ailments ranging from minor respiratory infections to stomach ulcers. Smoking during pregnancy also increases risks of complications of pregnancy and retardation of fetal growth.

Cigarette smokers have a 70 percent greater rate of death from all causes than nonsmokers, and tobacco is associated with an estimated 320,000 premature deaths a year. Another 10 million Americans currently suffer from debilitating chronic diseases caused by smoking.

A remarkable aspect of these statistics is that smoking presumably is voluntary, and theoretically all of this damage is therefore preventable.

Moreover, a large portion of a smoker's excess risk for heart disease disappears within two years after quitting--and within 10 to 15 years an ex-smoker's chance of early death from a heart attack is no greater than that of someone who never smoked. If, in fact, all Americans stopped smoking, coronary deaths could be reduced by approximately 30 percent, with a saving of more than 200,000 lives a year. And people who have smoked for many years can reduce their risk of lung and urinary bladder cancer if they stop.

Changing Trends

In 1950, when the Nation first became generally aware of an association between smoking and lung cancer, there were about 18,000 lung cancer deaths. In 1964, the year of the first Surgeon General's Report on Smoking and Health, there were over 45,000 lung cancer deaths. An estimated 92,000 deaths from lung and related respiratory system cancers occurred in 1977.

The 1964 Surgeon General's Advisory Committee Report concluded that cigarette smoking was a cause of lung cancer in men and was associated with coronary artery disease, chronic bronchitis, and emphysema. Since then, cigarette smoking's relationship to these diseases--and to still others--has become clearer. A comprehensive review of the evidence linking smoking with a wide variety of health problems--with particular attention to special smoking-related problems for women, children and workers--is presented in the 1979 Surgeon General's Report on Smoking and Health.

The public's reaction to the risks of smoking can be measured by changes in cigarette consumption. In the early 1950s, consumption declined in response to the first scientific reports. It rose again, then dropped when the Surgeon General's Report was

published in 1964, then rose a second time but dropped again between 1968 and 1970 as more television advertisements against smoking were aired.

All in all, more than 30 million smokers have quit since the first Surgeon General's Report, and the proportion of adult smokers has declined from about 42 percent in 1965 to a little more than one-third today. A large share of the decline is due to a drop in the proportion of men who smoke, but the percentage of women who smoke has decreased negligibly and there has been a doubling of the rate at which adolescent women (12 to 18 years) smoke.

Though the recent decline in the proportion of men who smoke is encouraging, an associated decline in cancer death rates may not appear for some years because cancer takes many years to develop. But the fall-off of heart disease deaths is undoubtedly due in part to the shift.

On the other hand, if the proportion of women who smoke does not decrease and current trends continue, experts predict that lung cancer will surpass breast cancer as the leading cause of cancer mortality among women by 1983.

Meanwhile, approximately 4,000 children and adolescents become cigarette smokers each day. While girls in the 1960s were smoking at about half the rate of boys, they now smoke as much. More than 20 percent of 12 to 17 year olds and about one-third of all 18 year olds now are regular smokers.

Approaches to the Problem

Much more can and must be done to educate the public about the risks of smoking.

Although Americans know about the relation between smoking and lung cancer, surveys show that they have yet to become aware that smoking-related cardiovascular diseases claim even more lives. And few believe they personally will suffer any harmful effects.

Physicians and dentists could be more helpful. Surveys show that only two-thirds of doctors and one-third of dentists routinely inquire about their patients' smoking habits. Only 25 percent of smokers say their physicians have told them to quit. Most physicians and dentists apparently wait until a serious smoking-related symptom or ailment has appeared, yet studies show that if doctors advise patients not to smoke, as many as 25 percent will quit or reduce the amount they smoke.

Most people say they intended to smoke for only a short time and well over half of new smokers confidently expect to stop within five years. The reality, however, is that once started the smoking habit is extremely difficult to overcome. About 90 percent of all current smokers have expressed a desire to quit.

To help smokers quit, many clinics, techniques, and devices have been developed over the past 20 years and different methods have succeeded to some extent with different individuals. But reverting back to smoking is a major problem for many people and effective techniques are needed to help ex-smokers avoid tobacco.

Actually, 95 percent of smokers who successfully quit do so on their own. And four factors seem to be of major importance in their success: health concerns (including symptoms); a desire to set an example for others; a desire for self-control; and aesthetic reasons such as breath odor and loss of taste for food.

These motivations should therefore be stressed in anti-smoking literature, advertisements, and broadcast announcements, as well as in special information campaigns directed to such high risk groups as pregnant women, industrial workers in especially hazardous occupational settings, and persons with health problems likely to be worsened by smoking.

Special efforts should be directed to children and adolescents. School health education curricula are needed to help a child make intelligent decisions about smoking--as well as about other behavior affecting health--and to help reinforce those decisions against peer pressure and other forces that impel them toward serious risk-taking behavior.

Effective curricula already in existence need to be more widely used. Educational activities must begin at the earliest possible point in school and continue systematically throughout the child's educational experience.

The best of these programs emphasize not only knowledge of the human body but also how it works and how behavior affects it. They also impart attitudes of personal responsibility for protecting one's own health and means of coping with pressures and uncertainties.

Efforts for teenagers must be designed to help them deal with their own values and attitudes toward smoking and with their own sense of maturity. They should be aimed at helping them develop the ability to resist group pressures toward smoking and at reinforcing the concept that, in fact, smokers are the minority--not majority--both in their own age group and among adults.

One approach, which makes positive use of the peer pressures that influence youthful behavior, is deploying students themselves as health educators. Such peer instruction programs have shown substantial promise in preliminary trials.

Some have suggested use of economic sanctions such as increased taxes to discourage smoking. This is a complex political and economic issue not readily accomplished. But the effect of price changes--particularly of dramatic changes--on consumption merits further investigation.

Development of lower tar cigarettes has been urged as a means of reducing hazards. And smokers can take a first step toward quitting and hazard reduction by using low tar and nicotine cigarettes. They can also reduce hazards by not smoking to the end of a cigarette, by taking fewer puffs on each cigarette, by reducing inhalation and, gradually, the number smoked daily.

While gradual reduction is better than no reduction at all, it should be noted that generally smokers who quit all at once have better success than those who try to quit in steps.

Also, there is no known safe cigarette--including the low tar and nicotine varieties--nor any safe level of smoking for any type of cigarette. The smoker who continues to smoke, even in reduced amounts, still runs a significantly greater risk of illness and death than the nonsmoker.

Finally, the rights of nonsmokers should be recognized and supported. Measurable levels of nicotine have been found in the blood and urine of non-smokers exposed to tobacco smoke. Such exposure may present a special health hazard for people with certain diseases. Breathing the smoke of others can lead to unsafe carbon monoxide levels, allergic reactions, and exacerbation of conditions such as asthma and bronchitis. For infants, risk of respiratory infections increases when parents smoke.

Legislation has been introduced in every state to restrict smoking in public places. Steps are being taken to restrict smoking in government buildings and facilities as well as on buses, airplanes, and passenger trains.

Despite all the difficulties, efforts to increase the number of nonsmokers should become much more energetic. The World Health Organization notes in a recent report: "The control of cigarette smoking could do more to improve health and prolong life in (developed) countries than any other single action in the whole field of preventive medicine."

Reducing Misuse of Alcohol and Drugs

Alcohol and other psychoactive substances exact a substantial toll of premature death, illness, and disability in the United States.

Alcohol

Because of its overuse and general social acceptance throughout American society, alcohol accounts for a significant share of the Nation's medical care cost burden.

Alcohol misuse is a factor in more than 10 percent of all deaths in the United States--about 200,000 a year. It is associated with half of all traffic deaths, many involving teenagers. Cirrhosis, which ranks among the 10 leading causes of death, is largely attributable to alcohol consumption. Alcohol use is also associated with cancer, particularly of the liver, esophagus and mouth. Primary liver cancer is almost exclusively attributed to alcohol consumption. People who drink and also smoke cigarettes have even greater increases in esophageal cancer rates. And excessive drinking during pregnancy can produce infants with severe abnormalities, including mental retardation.

Nor is the death and injury toll only for alcoholics or problem drinkers. Accidents, in particular, often involve the occasional drinker who is temporarily out of control.

Per capita consumption of alcohol by Americans increased during the 1960s--a trend generally attributed to the lowering of the legal drinking age in many States, an increase among young people consuming alcohol, and increasing use of alcohol by women.

The proportion of heavy drinkers in the population grew substantially in the 1960s to reach the highest recorded level since 1850, though it has leveled off in recent years. Drinking is greatest in the younger years and declines after age 50.

Currently, average consumption of alcohol for all persons older than 14 is 30 percent higher than 15 years ago--about 2.6 gallons of ethanol annually, representing a total of 28 gallons of beer, plus 2.5 gallons of distilled spirits and 2.25 gallons of wine.

Ten million adult Americans--seven percent of those 18 years or older--are estimated to be alcoholics or problem drinkers.

Of all adults who drink, more than a third have been classified as either current or potential problem drinkers, with women making up one-fourth to one-third of the latter. Youthful problem drinkers, aged 14 to 17 (intoxicated at least once a month) are estimated to number more than three million, between 20 and 25 percent of the age group.

The social and economic burdens associated with alcohol are enormous. Those who abuse drinking affect not only themselves but their 40 million family members as well. Alcohol abuse and alcoholism are estimated by the Alcohol, Drug Abuse and Mental Health Administration to have cost the Nation nearly $43 billion in 1975, including health and medical costs, lost production, motor vehicle accidents, violent crimes, fire losses, and social response programs.

Drugs

Although there is no question that drug misuse is a major problem, reliable information on actual prevalence is hard to obtain. Much depends on self-reporting and many problems occur among transient populations likely to be missed in any survey.

Moreover, interpretation of surveys is complicated by lack of agreement on what frequency of use of drugs constitutes abuse.

Heroin addiction, the most serious drug problem in the United States, appears to be declining. In 1978, there were an estimated 450,000 addicts,

compared with an estimated 550,000 in 1975. It should be noted that the decline parallels demographic changes in the number of young adults.

The toll from highly addicting heroin includes premature death and severe disability, family disruption, and crime committed to maintain the habit. The heroin user is at very high risk of overdose death, of hepatitis and other infections from contaminated equipment and impurities in the drug, and from chronic undernutrition because money is spent on heroin instead of food. Preventing consequences of overdose and infection in users is virtually impossible since there is no control over the strength and purity of the drug or the means of administration.

Central nervous system depressants and stimulants with potential for abuse include many drugs ordinarily prescribed for their medical value. At least one million Americans are believed to misuse barbiturates or other sedative-hypnotic drugs and 30,000 are estimated to be addicted to them.

Excessive doses of depressants over a long period can result in both physical and psychological dependence, with abrupt withdrawal (particularly of barbiturates) leading to convulsions which may produce permanent disability or even death. Overdosing with barbiturates--intentional and accidential--is a leading cause of drug overdose fatalities but has declined somewhat as physicians have changed prescribing practices. Combinations of barbiturates with depressants, particularly alcohol, greatly increase the chance of death.

Cocaine is a stimulant which--despite its high cost--has become very popular for its propensity to induce euphoria and reduce feelings of fatigue. Some 10 million Americans have tried cocaine at least once and one to two million are current users. Although physical dependence does not develop, psychological dependence may. Some deaths due to toxic reactions to cocaine have been reported.

Hallucinogens, which distort perception of reality, can cause potentially fatal toxic reactions. And their unpredictable psychic effects may result in unintentionally dangerous behavior. One hallucinogen, PCP (phencyclidine hydrochloride), has a well-deserved street reputation as a "bad" drug, yet many people use it regularly, and in 1977 it was associated with at least 100 deaths and more than 4,000 emergency room visits.

Other illicit drugs--with less harmful physical and social consequences--are in more widespread use.

There are some 16 million current marijuana users. Among males 20 to 24 who have ever used marijuana, perhaps 17 percent are daily users. Among high school seniors recently surveyed, about 10 percent reported daily use. Of special concern is the relationship of marijuana to automobile accidents; especially when used in combination with alcohol, and by teenagers and young adults who are at high risk of accidents.

One of the dominant concerns about use of marijuana and other psychoactive drugs is the reduction in motivation and performance they may produce when used chronically, particularly by children and adolescents.

Prevention Programs

Helping people to stop or avoid starting misuse of alcohol or drugs will not be easy--particularly among population groups in which social and economic factors are prominent contributors to abuse of alcohol and drugs, and therefore complicate potential interventions.

For the broad range of alcohol and drug problems, strategies for intervention differ; but there are some common elements. They include: prevention through education that starts early and extends throughout life; altering the social climate of acceptability; reducing individual and social stress factors; and law enforcement.

One reason recent alcohol education efforts have had little success in changing children's behavior is that their moralistic nature has not always matched parental behavior or the favorable image afforded alcohol use in television advertising and programming. Such dichotomy creates confusion in young minds.

Similarly, efforts to educate young people about drug abuse dangers have met with skepticism--and, in fact, on occasion, the excitement and drama employed to discourage a drug's use have created an incentive to try the drug.

Educational strategies directed against drugs themselves appear to be less effective than those built around the concept of individual responsibility for the daily decisions that can affect health.

Young people who gain an understanding of how body systems work and how their personal choices affect their well-being are better prepared to make wise choices about alcohol and drug use. For this reason, comprehensive school health education programs directed toward strengthening children's decision-making capabilities may hold particular promise.

Moreover, because peer pressure, as noted earlier, has profound influence on youth behavior, educational programs that build on peer group counseling are more likely to be successful. School systems, youth-related organizations such as the Boys Club of America, Catholic Youth Organizations, 4-H and the Scouts, and churches and other community-based organizations can help develop such programs.

These programs serve many purposes. They open communication channels between adolescents and the health community; they teach young people tangible skills and give them important information, thus increasing their sense of self-worth; they also provide needed community services.

Our society needs to find more socially constructive outlets for the interests and energies of children and adolescents. While urbanization and farm mechanization have moved rapidly, alternative activities for the work once required have not been adequately developed. Challenging work for young people is important for more than economic reasons; it helps build self-respect and a better outlook for the future.

The media can be important in creating a social climate that encourages sound health-related personal decisions. In recent years, television has reduced its emphasis on the social acceptability of smoking--only, ironically, to have lighting a cigarette replaced in part by pouring a drink as a typical stage routine.

Labeling policies for alcohol and prescription drugs may provide an important means for conveying information which will help users to avoid harmful affects. Product labels may be especially useful for informing expectant mothers of the potential effects of ingested substances on the fetus.

Help and support must be offered to those already suffering from misuse problems. For alcohol-related problems, Alcoholics Anonymous, similar organizations for families of alcoholics, and workplace-based programs may be successful.

Health professionals need to play a more active role. A physician who diagnoses cirrhosis has no difficulty in recommending against alcohol use but may miss earlier opportunities to make the recommendation when the advice could make a difference.

Physicians and pharmacists can also be very important in reducing availability of legal drugs which may be abused. Physicians need to exercise more caution when prescribing psychoactive drugs, and pharmacists should check with physicians when in doubt about prescriptions.

Finally, legislation and law enforcement can help. The experience of some jurisdictions indicates that social practices may be substantially modified through vigorous enforcement of laws such as those against driving while intoxicated, and careful study of the efficacy of such measures is warranted.

Improved Nutrition

Although evidence keeps mounting that certain food factors and current dietary habits may be linked with health problems as diverse as heart disease, tooth decay, obesity and some types of cancer, consumers often find it difficult to make informed choices about food.

Most know that good nutrition can make a substantial contribution to health and development of infants and children and that healthy eating patterns should be firmly established in adolescents and young adults. Most also are aware that good nutrition is particularly important for pregnant women and the elderly.

But food choices are influenced by many complex factors and the consumer is often bombarded with an overload of somewhat confusing--and even conflicting--information from books, newspapers, magazine articles, and advertising.

Most diet deficiency diseases prevalent early in the century are now rarely seen. But iron deficiency in children and women of childbearing age remains a public health concern.

And although less than one percent of the American people can be considered undernourished in the traditional sense, data from the first Health and Nutrition Examination Survey by the National Center for Health Statistics show a trend toward low calorie intake among certain adults over age 45, and particularly among women over 60. If the trend continues, it is possible that some diet deficiency diseases may reappear.

Nevertheless, today's nutrition problems are still more likely to be associated with eating too much and with imbalance in the kinds of foods eaten than from eating too little.

The Obesity Problem

Thirty-five percent of women between ages 45 and 64 with incomes below poverty level and 29 percent of those with incomes above are considered obese, according to the National Center for Health Statistics. The comparable figures for men are five and 13 percent.

Obesity is clearly related to diabetes, gallbladder disease, and high blood pressure. In association with other risk factors, it can contribute significantly to heart disease. In addition to the physiological problems, obesity may have serious social consequences for the young person growing up in a society which prizes slimness and athletic ability.

A genetic component may be involved in some obesity. But the social environment of the family--eating and exercise habits and a tendency to view food as a "reward"--is of great importance. And, as noted in Chapter 4, obese children are three times more likely to be obese adults than children who are not overweight.

There is no quick, easy solution to obesity. Among adults, it has proved very difficult to reverse on a lasting basis.

Permanent weight loss has been found somewhat easier to achieve by people who inventory their food intake, avoid situations that would entice them to overeat, and gradually change their eating and exercise habits. Many nutritionally sound diets are available for weight control, but people should be extremely skeptical about fad diets promising rapid, painless weight reduction.

Obesity is not the only nutrition-related health problem. Cardiovascular disease and cancer are other public health concerns that may be diet-related.

Nutrition and Cardiovascular Disease

A good case can be made for the role of high intake of cholesterol and saturated fat, usually of animal origin, in producing high blood cholesterol levels which are associated with atherosclerosis and cardiovascular diseases.

Animal studies have shown that reducing serum cholesterol can slow down the atherosclerotic disease process.

And, in man, studies have shown: people in countries where diets are low in saturated fats and cholesterol have lower average serum cholesterol levels and fewer heart attacks; that Americans who habitually eat less fat-rich diets (vegetarians and Seventh-Day Adventists, for example) have less heart disease than other Americans; and that atherosclerotic plaques in certain arteries may be reversed by cholesterol-lowering diets.

The weight of the evidence, therefore, now suggests that Americans who have been consuming high fat diets should attempt to reduce serum cholesterol by changing eating patterns. Moreover, these changes should begin at an early age. Not only adults but children in countries with low coronary heart disease rates have much lower serum cholesterol levels than many of our children have.

Many issues still need to be resolved. Among the most interesting are those concerned with high and low density lipoproteins (see Chapter 6). While it appears that a higher ratio of high-density to low-density lipoproteins carries a lower risk for heart disease, the effect of diet upon the ratio still is under study.

Some investigations indicate that the ratio is favorably influenced by lean body weight, regular vigorous exercise, smoking avoidance, consumption of small amounts of alcohol, and a diet with relatively more vegetables, fish and white meats than red meats. But further research is needed before definite statements can be made about diet and lipoproteins.

High dietary salt intake may produce high blood pressure, particularly in susceptible people. Unequivocally, studies in genetically predisposed animals show a cause-effect relationship between high salt intake and elevated blood pressure. Studies in man also suggest such a relationship and show, too, that when hypertension is present controlling salt intake can help combat it.

A prudent approach, given present knowledge, would be to limit salt consumption by cooking with only small amounts, refraining from adding salt to food at the table, and avoiding salty prepared foods. Careful label reading will reveal whether salt or a sodium compound has been added to a packaged food.

Diet and Cancer

The association between diet and cancer is more tenuous than between diet and heart disease.

Because populations with different dietary patterns have differing cancer rates--and emigrants assuming the patterns of their adopted country soon also assume new cancer rates--there has been much research into the possible diet-cancer association.

Studies in human populations have suggested a number of possibilities: that high consumption of animal protein may be linked to colon cancer; that low consumption of fiber from plant sources may also be linked to colon cancer; and that high consumption of fats, both saturated and unsaturated, may be linked to colon cancer and to hormone-related cancers of the ovary and prostate. All of these possibilities need further investigation.

Healthy Nutrition

Individual nutritional requirement variations make exact dietary standards impossible to establish. Variations also occur in the same person at different times--during pregnancy, with aging, during acute or chronic illness, or with changes in physical activity.

But given what is already known or strongly suspected about the relationship between diet and disease, Americans would probably be healthier, as a whole, if they consumed:

- only sufficient calories to meet body needs and maintain desirable weight (fewer calories if overweight);
- less saturated fat and cholesterol;
- less salt;
- less sugar;
- relatively more complex carbohydrates such as whole grains, cereals, fruits and vegetables; and
- relatively more fish, poultry, legumes (e.g., beans, peas, peanuts), and less red meat.

Adequate, balanced nutrition can be obtained by eating--in quantities sufficient to maintain desirable weight--a wide variety of foods each day, including meat or meat alternates, fruits and vegetables, cereal and bread-type products, and dairy products.

The processing of our food also makes a difference. The American food supply has changed so that more than half of our diet now consists of processed foods rather than fresh agricultural produce. Because of this change, we need more complete nutrient composition data about our food

supply, particularly as related to some of the newer essential "trace minerals" such as molybdenum, manganese, chromium, and selenium.

The quantities of these trace minerals have not previously been a nutritional concern because practically everybody consumed a variety of fresh or minimally processed foods. Increased attention therefore also needs to be paid to the nutritional qualities of processed food.

Better Nutrition Education

Food choices are determined in part by the nutritional knowledge of the person who buys or prepares the food. Other factors include availability, personal and family likes and dislikes, and marketing and advertising practices. These factors should be addressed in educational initiatives to promote good food habits.

Until now, nutrition education has provided information rather than instruction in the skills that can be used to improve dietary habits.

Such skills should be taught in formal and informal nutrition education programs for people of all ages. And these programs should consider what too often has also been neglected in the past: the differences in food preferences found in different cultural groups.

Teachers, in particular, need to receive training in nutrition; and nutrition should be an integral part of the school curriculum.

More can also be done in medical care settings. Although education about nutritional intake is essential and often provided for patients suffering with health problems such as diabetes or kidney disease, it is uneven in quality.

And although pediatricians, obstetricians and other health workers often include some form of nutrition education as part of their care of

infants, mothers, and pregnant women, rarely do they take advantage of this opportunity to build nutritional knowledge and positive attitudes for future decision-making.

Training in nutrition for physicians and other health professionals should have high priority, and nutrition training and services should be promoted in hospitals and clinics.

Sound nutrition information should also involve the media. Food advertising, particularly on television, has a powerful influence on food choices. Many foods are promoted for their convenience and ease of preparation or for their taste, rather than for nutritional value. Convenience and good taste are important considerations, but a balanced presentation should also consider nutritional value.

Results in the Stanford Heart Disease Prevention Program suggest that structured campaigns using multiple media sources can positively affect food selections to reduce, for example, consumption of products high in cholesterol or salt.

Education efforts must be augmented by direct food assistance to segments of the population finding it difficult to meet basic nutritional needs.

Certain older adults--for example, those with chronic diseases, acute illnesses, or particular genetic or lifestyle patterns--absorb nutrients less efficiently. But the primary problem for many of the elderly and other age groups is poverty and fixed incomes.

A number of Federal food distribution and supplemental food programs have been established to provide poor people with better diets. Among them are the nutrition services programs (including congregate and home-delivered meals), the Food Stamp Program, and the Special Supplemental Food Program for Women, Infants, and Children administered by the Department of Agriculture. Measures are needed to

strengthen these programs and to assist people in using them.

Exercise and Fitness

For more than a generation, American living has become increasingly sedentary. Most of us drive or ride to work and most other places. Work itself, for much of the labor force, involves relatively little, if any, vigorous physical activity. Even in recreation, people commonly have tended to be spectators, not participants. The relative lack of physical activity has led to a decline in physical fitness among youth and adults alike.

Within the past half dozen years or so, however, there has been a promising resurgence of interest in physical exercise and fitness. A 1977 Gallup Poll found nearly half of American adults saying that they exercise regularly to keep fit. Millions participate in tennis, bicycling, swimming, calisthenics and other forms of exercise. Running, in particular, has become a very popular pastime even though it is in reality confined to a relatively small, and highly visible, portion of the population. (According to the National Center for Health Statistics, five percent of Americans over age 20, and 10 percent of men aged 20 to 44 run.)

Health Effects

Physical fitness activities affect health in many ways.

People who exercise regularly report that they feel better, have more energy, often require less sleep. Regular exercisers often lose excess weight as well as improve muscular strength and flexibility. Many also experience psychological benefits including enhanced self-esteem, greater self-reliance, decreased anxiety, and relief from mild depression.

Moreover, many adopt a more healthy lifestyle--abandoning smoking, excessive drinking, and poor nutritional habits.

Sustained exercise improves the efficiency of the heart and increases the amount of oxygen the body can process in a given period of time. Compared to non-exercisers, people who engage in regular physical activity have one and a half to two times lower risk of developing cardiovascular disease, and an even lower risk of sudden death.

While not yet definitively proven, the role of exercise in preventing heart disease is attractive and plausible. An example of the growing evidence supporting the association between exercise and reduced cardiovascular risk comes from a study of 17,000 Harvard alumni. The physically active among them had significantly fewer heart attacks than the more sedentary. Those who expended less than 500 calories a week in exercise developed heart disease at about twice the rate of those expending 2,000 or more calories a week (approximately 100 calories are used for each mile run or walked). Regular, vigorous exercise was found to reduce risk of heart disease independently of other risk factors such as cigarette smoking or high blood pressure.

The kind of physical activity probably most beneficial to the cardiovascular system is sometimes called aerobic--exercise requiring large amounts of oxygen for energy production. Examples include brisk walking, climbing stairs, running, cross-country skiing, and swimming.

An average of 15 minutes or more of aerobic exercise is thought to produce beneficial effects which are further increased when the exercise is done vigorously.

A reasonable goal for any individual ought to be 15 to 30 minutes of exercise at least three times a week. A beginner should start slowly and people over 40 should be examined by a physician first.

Non-aerobic activities, such as weight training and calisthenics, are useful for enhancing muscle tone, strength and flexibility. But they are often intermittent and less vigorous, and therefore may be

less effective in reducing risk for cardiovascular disease.

The risk may be reduced by regular, sustained exercise in several ways. Such activity may cause the blood pressure of a hypertensive individual to fall an average of 10 points and may also lower serum cholesterol while raising the level of desirable high-density lipoproteins. It can also get rid of excess weight. Walking or running a mile daily--or swimming one-quarter mile--can lead to a reduction of more than 10 pounds in a year.

Aerobic exercise, when carefully prescribed, has been found useful for patients with chest pain (angina pectoris) and those recovering from heart attacks, enabling them to increase the amount of activity they can perform free of chest pain.

Such exercise has also been shown to be useful in treatment of other diseases. Asthmatics and people with chronic obstructive lung disease often can improve their respiratory capacity. Diabetics can lower their blood sugar levels and insulin requirements, and overweight adults who have become diabetic often are freed of any indications of the disease when they achieve normal weight through exercise and diet.

Gaps and Needs

Despite a doubling of the percentage of those who exercise, most participants do not exercise often or vigorously enough to achieve maximum health benefits.

Participation rates are higher among whites than minorities; among males than females; among younger than older persons; among the more educated than the less educated; among professionals than blue-collar workers; among the affluent than the poor; and among suburbanites than city dwellers.

For children and adolescents, too often exercise involves an emphasis on team sports in which much of

the time a player is inactive, and which are rarely engaged in later in life. More valuable would be properly conducted physical education programs that could help promote lifetime habits of vigorous exercise as well as contribute to child growth and development.

Most older people do not exercise regularly. Yet suitable exercise programs can help them in many ways: by reversing the replacement of muscle by fat associated with inactivity; maintaining a good posture and muscular strength required for efficient movement in daily activities; improving joint mobility for the better balance skills needed for safety; and stimulating cardiorespiratory endurance.

Some people who exercise began on their own or because they were influenced by a friend. Other motivating influences include school, employee health fitness programs, health professionals, media, and government programs.

In the early 1960s, responding to the emphasis by President John F. Kennedy through his Council on Youth Fitness, many schools undertook more extensive fitness programs and a number of States began to require daily physical education for school children.

But since the late 1960s, many school physical education programs have had to cut back for lack of adequate State and local funding. Many States today have only limited requirements for physical education and no requirements at all for some grade levels. It has become even more important for parents to see that their children are exercising adequately.

During the past few years, an increasing number of employee fitness programs have been developed in business and government. Some companies have full-time fitness directors in charge of programs. In the most successful activities, participation rates range up to 40 percent, with benefits accruing to management as well as to workers who, feeling better, often may work better.

Health professionals have largely ignored active promotion of suitable exercise for their patients. A recent survey found 80 percent of patients not remembering that their physicians had ever recommended exercise. When exercise was recommended, it was usually of nonvigorous nature with limited value. More interest and concern by health professionals could do much to get more people exercising.

On a national level, government involvement has largely been through the President's Council on Physical Fitness and Sports. Since 1956, the Council has provided impressive leadership in drawing attention to the importance of exercise and fitness. It has assisted in development of employee health programs, public information programs, and special projects designed to increase participation in fitness and sports activities.

But what is needed is a substantial national effort involving all levels of both public and private sectors.

Stress Control

Stress is normal, inevitable; a part of life. It is experienced in family relationships, school, work, traffic, shopping, financial and other problems. And everyone develops means of coping--more or less effectively.

Some means of coping are beneficial--as, for example, when the response is an effort to improve performance.

But there are destructive responses such as excessive alcohol use, resorting to drugs, violence, reckless behavior, depression, and other forms of mental illness.

There are indications that stress can be related to cardiovascular disease and deaths, gastrointestinal disorders, and other diseases and physical health problems as well as much mental illness.

Studies have indicated that stress in the home, for example, can increase a child's risk of streptococcal throat infection--and an expectant mother's risk of pregnancy complications.

One revealing study assessed pregnant women, married, of similar age, race, and social status, all of whose babies were delivered in the same hospital. The finding: those women undergoing a great deal of social stress and lacking strong social supports--measured by closeness of ties with husband, family, and community--had almost three times the frequency of complications of pregnancy or delivery.

People under stress experience measurable changes in body functions: a rise in blood pressure and secretion of adrenaline and other hormones at higher levels. The changes are basically defensive, mobilizing body energies to meet a threat.

But when stress--or an individual's reaction to it--is excessive, physiologic changes can be so dramatic as to have serious physical and emotional consequences.

Reducing the Harmful Consequences of Stress

Two strategies are needed to minimize destructive stress consequences: preventing or reducing stress itself and improving individual stress-coping skills.

Opportunities for stress prevention exist in the work setting. Many jobs are dull, boring, or dangerous. Many people work under unpleasant circumstances--noise, polluted air, cramped quarters. The fear of losing one's job is an important source of stress.

Many of these factors, as noted earlier, can be eliminated or reduced. The work environment can be improved. Job assignments can be better tailored to individual interests and capabilities. Such

improvements may pay dividends in increased productivity and decreased absenteeism and job turnover rates as well as reduced stress for the individual workers.

In the community setting, stress for individuals and groups often can be reduced through helping networks, neighborhoods, and community organizations.

The recent report of the President's Commission on Mental Health noted the significance of support systems in fostering a sense of security and as an effective treatment measure for people suffering problems associated with both physical and mental health.

There is extensive evidence of the importance of a sense of neighborhood or belonging for people and of the meaningful roles in people's lives played by neighborhood institutions such as churches, schools, ethnic clubs, fraternal organizations, community organizations, and others.

In a pluralistic society, people meet needs and solve problems in varied ways. And a neighborhood-based approach--with community support systems designed to address diverse individual needs--can be critical to individual well-being.

Strengthening neighborhood networks can help people in many ways: to gain a sense of control over their lives; reduce alienation from society; improve capacity to solve new problems; and maintain the motivation to overcome handicaps or the frustrations common in modern society.

With adequate day care programs, for example, stressful pressures on working mothers can be reduced. The stressful consequences of unwanted teenage pregnancy and motherhood can be substantially reduced by programs that enable the young women to complete their educations and qualify for satisfactory employment.

Racial and ethnic tensions can be eased through community action to improve cooperation and understanding. Young people at highest risk of becoming school dropouts can be identified and programs can be designed to anticipate and help meet their needs. Elderly people in need of support after retirement or loss of a spouse can be identified and helped through community services.

Efforts to improve coping skills must begin with an understanding of the events most difficult to handle emotionally.

Extensive research in this area has generally confirmed folk wisdom. The death of a spouse, the serious illness of a child, the loss of a job, family disruption and divorce, and other catastrophic changes over which the individual has little or no control, are the stresses most likely to cause psychosomatic disorders or other emotional problems, and their consequences.

Since stressful events are not always preventable, preparation for dealing with them needs to begin early. Emphasis should be given to building coping skills in children and young people. Too often, stress has been addressed only after the problem is fully developed--by treatment of the alcoholic, the drug abuser, the acutely depressed person, and by penalties for criminal offenders. Much more attention should be given to preparing people to deal in less destructive ways with unavoidable stresses.

To help young people and adults deal with critical stresses as they arise, a number of self-help and mutual support activities have been developed in communities across the country. Many evolved from the crisis intervention centers of the late 1960s. They deal with a wide range of stress-generated or stress-related problems: alcoholism, pregnancy, divorce, suicide attempts, rape, terminal illness, death of a child, death of a spouse, and many others.

There are in addition self-help, mutual aid groups for the handicapped; drug abusers; parents of handicapped children; parents who abuse their children; young people in search of jobs and identity; widows; old people; patients who have heart attacks, colostomies or mastectomies; gamblers; smokers; drinkers; overeaters; and many more. These groups constitute a significant community resource.

Although the group programs may vary in effectiveness, their rapid spread indicates they may be responding to social needs not completely filled by families, churches, schools, or health and mental health professionals.

Helping to prevent suicide is a particularly important task.

Health professionals who see people at high risk--and the families and friends of such people--may be able to assist by carefully assessing their emotional status and providing, or referring them to, appropriate help.

Guns, alcohol, barbiturates and other drugs with lethal potential are used in a large proportion of suicide attempts. Their availability and use could be controlled more effectively.

Suicide also can be prevented by indirect means. Notably, in England, when the carbon monoxide content of gas piped to homes was reduced, suicides as well as accidental deaths dropped sharply. And while what had been the most common means of committing suicide was virtually eliminated, there was no compensating increase in suicide by other means.

A vital part of community strategy to reduce harmful stress consequences is to assure that people know about available services--and that services are truly accessible in terms of location and hours of operation. This applies to hotlines and sources of professional counseling as well as self-help and other supportive services.

For this, local media, telephone directories, churches, civic organizations, and other outreach channels can be used.

And there must be an effort to have services offered in ways that assure that no stigma attaches to their use.

Not least of all, there should be educational efforts by health professionals, schools, and all community groups and services to underscore the importance of the family as a potential resource for individuals trying to cope with stressful situations. How families develop communications between parents and children, offer support to a troubled member, and care for needs and views of family elders can either trigger or intensify stress on the one hand, or, on the other, help significantly to ameliorate it.

To be sure, stress is inevitable with living. But excessively stressful factors in the environment can be assessed; many can be reduced or removed; and families and educational, social service, and other support programs can help people cope effectively with those that remain.

Exactly how much can be achieved by strong, multi-faceted community programs to deal with stress is difficult to predict. But certainly it is important to test the extent to which such programs can reduce the individually and socially devastating effects of failure to cope adequately: homicides, suicides, substance abuse, accidental deaths and injuries, and disease.

Even relatively minor reductions would amply repay the investment.

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Collectively, smoking, misuse of alcohol and other drugs, poor dietary habits, lack of regular exercise, and stress place enormous burdens on the health and well-being of many Americans today.

Identifying and implementing ways to help people adopt more healthful habits will require a large commitment from government, schools, media, health professionals, and business and industry.

It will be necessary, too, to work to reduce pressures in our society which often lead people to adopt unhealthy habits.

Although helping people to understand the need for and to act to change detrimental lifestyles cannot be easy, the dramatic potential benefits clearly make the effort worthwhile.